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Traité De l' Organe *de l'* Ovie *par Mons*$^{r.}$ Du Verney. 8$^{vo.}$ *A* Paris 1683.

THat you may know what to expect from Monſ^{r} *Du Verney*'s treatiſe of the *Organ* of *Hearing*, the Firſt thing to be conſidered is, the Natural, and therefore the Beſt, *method* he hath taken in it. The Book is divided into three parts, the firſt of which contains his *Anatomical Diſcoveries* of the ſtructure of the *Organ* it ſelf; The Second part gives us the uſe of all the parts of that *Organ*, grounded upon the *Mechaniſm* of the whole; The Third and laſt part containeth the *Diſeaſes* incident to this *Organ*, with a full deſcription of the ſeveral cauſes which diſaffect it, and the manner they act by, together with particular *Remedies* for each *Diſtemper*.

The *Ear* is firſt divided into the External and the Internal: the External is compoſed of a Cartilage covered with a Skin very delicate, under which you meet with another *Nervous* tegument, that immediately embraces the whole *Cartilage*, which after ſome few folds terminates in that part of the Ear which we call the *Concha*, from its reſemblance to the entrance of a ſnail-ſhel: beſides theſe it hath two *Muſcles*; the Firſt is made up of certain carneous *Fibres* fixt to that part of the *Pericranium* that covers the muſculous *Crotaphytes*, and deſcends in a ſtraight line to inſert it ſelf at the upper part of the ſecond folding of the Ear: the Second likewiſe conſiſts of five or ſix *Carneous Fibres* that take their riſe from the upper and foremoſt part of the *Apophyſis Maſtoides*, and deſcending obliquely for about an inch terminate at the middle of the *Concha*. *Arteries* it hath from the *Carotid's* one branch of which paſſeth behind, and the other before, and the diſtribution of theſe is attended by *Veins* from the external *Jugular*.

The hole of the *Ear* is a *Tube* reaching from the *Concha* to the *Drum* and conſiſts partly of a *Cartilage*, and partly of a *Bone*: the Skin that covers it is furniſhed with an infinite number of *Glandules* of a Yellowiſh colour, each of which hath its *Tube* opening into the cavity of the *Ear*, and ſending forth that yellow glewy ſubſtance which is ordinarily found there: at the end of this paſſage is ſeated the *Membrane* called the *Drum* and is almoſt round, dry, thin, and tranſparent, and is incaſed in a channel cut in the bone at the end of that *Tube*. After this *Membrane* ſucceeds a cavity which he calls the *Barrel*, from the likeneſs it hath to the *Barrel* of a *Drum*, being on the ſides encompaſſed by the Bone, cloſed before by that Membrane, and behind by the ſurface of the *Os Petroſum*. This *Barrel* of the *Drum* contains in it five ſorts of things remarkable, *viz.* Two *Channels*, Two *Apertures*, Four *Bones*, Three *Muſcles*, and One *Branch* of the *Nerve*. The Channel that goes from the *Ear* to the *Palate* he calls the *Aqueduct*, and denies it to have any *Valves* to hinder the paſſage of any thing from the Ear,

The *Apertures*, or *Windows* are ſcituated in the *Superficies* of the *Os Petroſum* oppoſite to the *Drum*; the higheſt is the *Oval Window*, in the bottom of which is a ſmall edg on which the *Baſis* of the *Incus* reſts; the other which is called the *Round Window*, has a ſmall Channel in which is ſet a very fine, dry, and diaphanous *Membrane* like that of the *Drum*.

The firſt of the bones is the *Malleus*, the length of which is commonly about Four Lines (or Four of Twelve parts of an Inch) the Diameter of its breadth is the Third of its length; the Second is the *Incus*, the longeſt of whoſe legs is joyned to the *Stapes* by the mediation of the Fourth bone.

Of the Three Muſcles which are contained in this Cavity ty, two belong to the *Malleus*, the Third to the *Stapes*; laſtly, the branch of the *Nerve* which paſſes behind the *Drum* has been taken by ſome for the *Tendon* of the *Muſcle* of the *Malleus*, is a branch of the Fifth pair.

The Two *Windows* open into a cavity which is hewn in the *Os Petroſum* and called the *Labyrinth*, divided likewiſe into three parts *viz*. the *Entery* of the *Labirinth*, the three *Semi circular Canals*, and the *Snail-ſhel*

The entry of the *Labyrinth* is ſituated behind the *Oval Window* and hath Nine apertures, *viz*. the *Oval* one and Eight more, the Firſt of which leads into the upper part of the *Snail-ſhel*, Five belong to the *Semi-circular Canals*, and the two laſt tranſmit two branches of the ſofter portion of the *Auditory Nerve* &c.

The implanted air he takes to be that contained within the above mentioned *Windows*, which being both cloſed, the one by the baſe of the *Stapes*, the other by a *Membrane* of its own, do ſufficiently forbid any intercourſe between that and the external air, and diſcourſing of the *Nerve* which paſſes along the *Muſculus Maſtoides* and the *Parotids* to the Ear, he deduces it from the ſecond pair of the *Vertebral Nerves* which, he ſays, Dr. *Willis brings from* the the firſt.

The differences of this *Organ* in the *Fœtus* are that the bony part of the entrance to the Ear is nothing but an hard *Membrane*, that there is a ring which ſerves for a frame to the *Tympanum* ſeparable from the *Os Temporum*, tho afterwards united to it, and that while the *Fœtus* is yet in the womb, the *Tympanum* is covered with a mucilagenous matter, which afterward hardens into a *Membrane*, though at length it totally diſappears &c.

The *Small-bones*, the *Labyrinth*, the *Canals*, the *Snail-ſhel*, and other internal parts have the ſame Figure, and to appearance the ſame bulk in Infants wch they have in Men, and all that years contribute to them is Strength and Solidity. Haveing given an exact deſcription of the parts of the *Ear*, he follows it with the uſe of thoſe parts.

The external *Ear* collects the ſounds, and augments the impreſſion by the various reflections the voice undergoes in its paſſage through the folds of it. The uſe of the *Muſcles* he acknowleges to be obſcure, though he gueſſes their action may be to contract, or dilate the *Concha* as the tremblings of the *Air* are ſtrong, or weak.

In the Internal Ear, the *Tympanum* is ſtretched and made ſlack again, by the muſcles of the *Malleus*, in the tenſion of it both the *Muſcles* act, but in the relaxation onely the external, whoſe action it is to reduce it from a *Concave* to a *Plain*, all which is manifeſt from the inſertion of the *Muſcles*: the determination of which action he deduces, not from the will, but from the various diſpoſitions, and appulſe of the *Objects*, as a ſharp note is cauſed by a body whoſe parts are ſo diſpoſed as to be capable of very quick Vibrations, which they as ſuddainly impreſs on the Air; on the contrary, the flat note proceeds from the *ſlower Stroaks* of a body with parts that can onely be ſo agitated, to which differences the *Tympanum* readily complies, and does as it were put on their particular *Character*, this is delivered hence to the *Malleus*, and ſo forward, till at laſt the ſame fluctuation is cauſed in the *Os Petroſum*, and in the *Labyrinth*.

The *Aquiduct* ſerves chiefly for the ingreſs and egreſs of *Air*, to and from the *Cavity* into which it opens, and not to ſupply the defect of the *Tympanum*; which he argues from a deaf mans hearing the ſound of an *Inſtrument*, then, and then onely when he holds the *Neck* of it between his *Teeth*.

The immediate Organ of hearing he perſwades to be the three *Semi-circular Canals*, they being found in all *Animals* and in ſome onely they; as in *Birds*, and *Fiſhes*.

From the Communication of the harder portion of the *Auditory Nerve* with the branches of the *Fifth Pair*, which are diſtributed to the *Organs* of the *Voice*, proceeds that

Sympathy between ſpeaking and hearing; from the Communication of other *Nerves* follow the *Motions* of the *Body*, and even of the *Spirits*, which often accompany the ſounds we hear as in the effects of *Muſick*, *&c.*

After the explication of the Structure and uſe of the *Organ*, follow the *Diſeaſes* incident to it, where he obſerves the method he before made uſe of, and aſſigns *Diſeaſes* to the particular parts in the order they lye, as that the external ear is ſubject moſt of all to a Pain which commonly ſeizes the *Concha*, and the whole *Ductus* even to the very *Tympanum*, and is attended with *Punction*, *Eroſion*, *Tenſion*, a ſence of *Weight* and *Pulſation*, each of which *Symptoms* he explains a part, aſſerting Pain it ſelf to be the effect of the *Solution* of the *Continuity* of its parts, and what ſoever can procure the *one*, muſt neceſſarily produce the *other*.

The ſecond Diſtemper is the *Inflamation* of the *Ductus*, cauſed either by the obſtruction of the *Glandules*, the *Acrimony* of the *Humours* or ſometimes by *Wormes*, which are either generated there *Equivocally*, or more probably hatched out of *Egs* of *Inſects*, which flying about in the air in vaſt numbers may not unlikely lay them in the *Ear*.

The third *Diſeaſe* of this part is its *obſtruction*, proceeding from different cauſes, as from bodies accidentally gotten into it, from the abundance and petrifying of the *Wax*, from a præternatural *Membrane*, carneous *Excreſcences*, or ſwelling of the *Glandules*.

The diſtempers of the *Drum* are its *Flaccidneſs*, its growing *Callous*, too great *Tenſion*, and breaking, thoſe of the internal Ear are the *Caries* of the bone, and *inflammation* of the *Membranes*; The Nerve is likewiſe ſubject to *Obſtruction*, or *Compreſſion*. Laſt of all he diſcourſes of the *noiſe* in the *Ear* which is a *Symptome* attending moſt of the Diſeaſes of it. The *Caſes* he brings for the confirmation of all this, as likewiſe the *remedies* may be firſt ſeen in the *Au-*

Author. This Doctrine is all along illuſtrated with *Figures* of the *parts* in ſixteen large *Tables*, in which each part is repreſented larger than in nature it is, for the clearer perception of it, as alſo of its connexion with, and relation to the other *parts*, he hath given us a new draught of the *Baſis* of the *Brain*, which he expoſes more to view by cutting off the hinder *Lobes*, and ſo placeing the *Brain*, and *Cerebellum* in the ſame plain which he looks upon to be abſolutely neceſſary for a true proſpect of the *Medulla oblongata*, and the *Origine* of all the *Nerves* which proceed from it.

An Account of Two Letters *of Mr.* Perault, *and Mr.* Mariotte, *concerning* Viſion; *Printed at* Paris 1682.

THe Occaſion of theſe Two *Letters*, was an Obſervation of Mr. *Mariottes*, that any *Object* is not ſeen when the *Species* light upon the *Baſis* of the *Optic Nerve*. The Experiment upon which it is grounded is this: take a piece of white paper of Six Inches *Diameter*, and faſten it upon a dark coloured Wall, that it may be level with your Eyes; take another ſmall piece of Paper and place it towards your Left hand, at Two Foot diſtance from the former, but about Two Inches higher on the Wall: if you then remove to the diſtance of Eight or Nine feet, and cloſe the left Eye, fixing the Right upon the ſmaller piece of paper, the Larger paper will quite diſappear.

It is not at all doubted but the *Image* which ſhould appear falls juſt upon the *Baſe* of the *Optic Nerve*, it is alſo certain that the *Retina* is to be found in that place, but the *Choroid* not; which gives a very fair ſuſpition to Mr. *Mariotte*, that the *Choroide* is the ſeat of *Viſion*, and not the *Retina*.

The *Novelty* of this *Opinion* hath found many *Oppoſers*, and among the reſt *Monſieur Perault*, whoſe *Arguments* in the firſt Letters are in ſhort reduced to Three Heads.

1. If the *Choroide* were the ſeat of *Viſion*, its function would be hindred by the branches of *Blood Veſſels* lying in the *Retina*.

2. The *Choroide* ſhould not be rugged and unequal; nor

hard and thick ; nor have a ſlimy or dirtineſs upon it, to hinder the Impreſſion of light, nor want a Communication with the *Optick Nerve*.

3. If the want of *Viſion* in the foregoing Experiment, may be ſalved by any of the Two probable reaſons here offered; then there is no need of diſcharging the *Retina*.

To the Firſt of theſe Mr. *Mariotte* anſwers ; That there are defects in *Viſion* cauſed by the *Blood Veſſels* in the *Retina* (and he proves it by a remarkable as well as new Experiment) but theſe defects are not ſenſible when we look with both Eyes; for there are no *Veſſels* that lye ſo near the *Axis Opticus* as to hinder a direct view; and in an Oblique, one Eye helps the other : it being difficult that the *Rays* ſhould fall on a like *Plane* in each Eye. Again theſe *Veſſels* that are neareſt the *Axis Opticus*, are no bigger than a *Hair* , or the 240th part of an Inch ; and being in the ſurface of the *Retina*, are at ſome diſtance from the *Choroide*, ſo as to let *Rays* enough paſs under, for the diſtinguiſhing of *objects* not very ſmall. The *Veſſels* alſo that carry the blood are clear and *Pellucid*, cauſing a *Refraction* that is helpful to *Viſion*.

Here alſo may enter ſome general conſiderations as that the impreſſion of a luminous *Object* remains ſometime in the *Organ* : that ſome *Fibres* being ſtrongly moved, others near them are alſo in motion : that the *Eyes* are always in motion, and very hard to be fixt in one place, tho it were deſired.

To the Second head he anſwers, That the concavity of the *Choroid* cannot be very rugged ; for upon the diſſecting an Eye, and removeing the *Retina* , the ſurface of the *Choroide* has reflected an Object as diſtinctly as a concave *Speculum*. That there appears no ſoyls or dirtineſs, till the outward *Cuticle* be broke, and then the Organ is diſorderd. As for the thickneſs of it, he ſays he finds it in a man but as a ſheet of Paper, or the *Pia Mater* in the brain. That the *Blood Veſſels* are weaved together with the *Nerves* upon which Account there may be as true a ſence of Light in them as there is of Pain in the hand (which is alſo full of *Blood Veſſels*) when it is prickt with the point of a Needle: and perhaps the preſence of *Veins* and *Arteries* in a member, is abſolutely neceſſary to ſenſibility. The blackneſs of the *Choroide* may make its niceneſs of ſence, as we ſee Paper blackt eaſieſt fires. He ſays the *Choroide* does communicate with the *Optick Nerve*; by which *Nerve* he does not underſtand the *Marrow*, or inner part of it, which is inſenſible; but the *Membrane* (being part of the *Pia mater*) which incompaſſes it, and is the true *Organ* of ſence not only in the *Eye*, but alſo in the *Ear*: whereas the *Marrow* of the *Nerves* contain only ſpirits and liquour uſeful to motion.

To the Third head, where Mr. *Perault* gives reaſons why there is no Viſion upon the *Baſe* of the *Optick Nerve*, as firſt ſuppoſing that Viſion is to be made on a ſmooth ſurface, the *Optick Nerve* which is a bundle of *Fibres* is not ſmoothe'd at its firſt entring the *Retina*, but afterwards when the *Fibres* are diſſolved, and ſpread into a Coat, as when Rags are made into Paper.

Here Mr. *Mariotte* (If I rightly comprehend him) denyes the *Retina's* conſiſting of *Fibres*, affirming it to have nothing but a Mucouſneſs with ſome *Veins* and *Arteries*.

But if I am not miſtaken (in an Experiment of Dr. *Briggs*'s, a *Retina* put into a Glaſs of fair Water, and drawn about under Water, both for the Expanding and Magnifying it, appeared plainly to have a fibrous texture, like that of a piece of very fine Lawn.

In the Second place, Mons^{r} *Perault* ſuppoſes that the *Choroide* being pierced by the *Optick Nerve*, there may come a light thro the parts of the Eye, the back way, into the *Optick Nerve*, which would ſpoyl the ſenſe of another light coming thro the *Pupil*.

But this Mr. *Mariotte* will by no means agree too.

Hiſtoria Naturalis Helvetiæ *Curioſa, Authore Joh.* Jacobo Wagnero *M. D. Tiguri.*

THe Author profeſſes that he undertook to write the *Natural Hiſtory of Switzerland* upon the Invitation of my Lord *Bacon*, and with an Intention thereby to promote a true *Experimental Philoſophy.*

He divides his *Book* into Seven *Sections*. In the Firſt he lays down the Antient and Modern Limits of *Helvetia*, together with the general qualities of the Soil.

In the Second he ſpeaks generally of the name of the *Alps*, and their height, difference of ſeaſons and fruitfulneſs, of *Ice* remaining intire Two or Three Hundred years, in which ſome of the Cracks have been obſerved to be three or four Hundred Ells deep, of the Cold of the *Labinæ*, or Heaps of *Snow* rolling off the *Mountains*, and bearing down *Woods* and *Villages*: of Caverns, Grottes, and great Receptacles of Waters, of the fall of the Earth or part of the Mountains doing often great miſchief.

In the Third concerning *Waters*, he enumerates the *Lakes Rivers, Cataracts, Baths* hot and cold, Medicinal Waters to drink, Salt and Bituminous Springs, Petrifying waters, Springs riſing and intermitting at certain ſeaſons, waters cauſing a ſwelling under the throat, miraculous or fabulous waters, among which he ſpeaks particularly of the Lake of *Pilate* ſaid by Thirty Five ſeveral Writers to cauſe Tempeſts, rain, Thunder &c. if any thing were caſt into it; but the *Author* from his own experience refutes this Error, and aſures us that he found it a very tame *Puddle*, not deſerving to be called a *Lake.*

In the Fourth; He treats of Living Creatures firſt of the *Men* and their *Size* at preſent (tho he mentions the Bones formerly found of ſuppoſed *Giants*) of their Courage and Strength, of their Longævity, Prolifickneſs and Ingenuity: Of their *Cows* and the Advantages they have from them, of the *Hair-Balls*, found in them, whereof the Author took ſeven out of one Stomack; of the Spleen of an *Ox*, weighing Thirty pound. The other Beaſts more peculiar to the place are large Staggs, Bears, Wolves, Wild Cats, Beavers, Linx's, Marmots, Martrees, White Hares, White Squirils, White Moles, White Weaſels, the Roe-Buck, the Ibex, the Rupicapra in which are found the Balls called *Gems-Kugels*. Beſides theſe there are ſometimes *Moſchelaphi* generated of a Stag and a Cow, and *Hippotauri* generated of a Bull and a Mare.

Of their *Birds* the chief are the Yellow and Black Eagles, the Vultur, the Hawk, the Falcon, the wild Duck, ſeveral ſorts of wild Geeſe, the Pelican, the Cock of the wood, the Wood-Pecker, the Red-leg-Partridge, the Ring Ouzel, the Bittern, the Grouſe, the Horn Owl, the Raven, Pyrrhocorax, Merula Torquata, Lagopus a white Bird as big as a large Pidgeon, having the legs feather'd, &c.

The *Fiſhes* (tho not communicating with the *Sea* in 500 miles) are Salmon, Barble, Trout, Carp, Perch, Guiniad, Lamprey, Lampern, Mullet, Eelpout, and the greateſt of all the Silurus's, &c.

The *Crefiſh* are ſome of them red, when they are raw, and ſome Azure coloured, ſome of them are not red after boyling, they are taken notice of to have three teeth in the Stomack, and the Males to have a double *Penis*.

Among the *Inſects* are deſcribed the *Muſca Aquatilis æſtiva major* of *Mouſet*. A long fly with red Wings and the *Carabus*, there are alſo mentioned three ſorts of Locuſts, the Spaniſh fly, the Evechur, the Oyl Beetle, the *Cervus Volans*, a ſort of Scorpions, not poiſonous and without

Tail , the *Pituo campi* , and Snow Worms.

Serpents there are, no doubt, but the Author takes pains to prove the exiſtence of *Dragons*, with Feet, and without Feet, Wing'd, and without Wings, as big as a May-pole, but the Authorities are either old Hiſtories, or Stories at the ſecond hand, with few Circumſtances.

In the Fifth *Section* he ſpeaks of the *Trees* &c. As the white and red Fir-tree (from the colour of their Bark) theſe are the moſt natural to the Soil, one of which he ſays grew to the heighth of 160 feet, and 24 feet in the Circumference, the *Pinaſter*, the *Pinus Montana tertia, C.B*; the *Larch-tree*, out of which comes the Venice Turpentine, and upon the Trunck whereof grows the *Agarick*.

Here is ſubjoyned an Alphebetical Catalogue of the of the chief of the *Alpine* Plants, which are growing in *Monte fracto*, and other places.

The Sixth *Section* is concerning *foſſiles* where there is a large Catalogue of the leſs pretious Stones, but among the Stones of value are reckoned the Amethiſt, the Carbuncle, Criſtal, which is denied to be made out of *Ice* or *Snow*.

In enumerating the *Luſus Naturæ* its left doubtful whether the ſquare Stone Dice found about *Baden* are natural or not. But the natural *Urns* ſaid to be found neer *Geneva* and other places, are poſitively affirmed to have been taken up full of *Bones* and *Aſhes*.

Among *concreted juices* is reckon'd *Sulphur Vivum* and *flores Sulphuris Nativi* found at the *Baths*, and a true *Nitre* taken from the Decoction of the fountain of *Scolij* or *Scultini*.

Golden Sands are found in the River *Rhine*, the *Emma's Urtena, Urſa, Arola*, and *Addua*, Mines of *Silver* have been diſcovered in ſeveral places, but the digging them has not turned to profit. There are alſo Mines of *Lead* and *Copper* but not ſo plentiful as thoſe of *Iron* and *Steel*. Tho Ships do not uſe to appear under this head, yet the Author here relates the famous Story of a Ship found 150 foot under ground, neer *Bern*, in the Year 1460, about this there have been many conjectures, particularly, one of *Moretus*, that the lakes at the heads of ſeveral Rivers might formerly have been joyned together, ſo as to make the way Navigable between *Geneva*, *Bern*, and *Conſtance*, but this the Author wont believe.

The laſt *Section* is about *Meteors*, where is mention'd among other things ſtrange *Thunder* and *Lightning* hapning in the *Winter* time, as well as the *Summer*, and doing much hurt, as alſo *Hurricanes* raiſing up the water of ſome lakes like a *Pillar* into the *Clouds*, and ſometimes pouring it down again at a diſtance upon the land.

IIII. Johannis *Jacobi* Zimmermanni Cometo-ſcopia: *Or three Aſtronomical Relations concerning the* Comets *that have been ſeen in the years* 1680, 1681, 1682, *Printed at* Stutgard *in* 4° Anno 1682.

THE *Author* of theſe *Deſcriptions* divideth every *Relation* into three parts; firſt an Hiſtorical Account, when and how the *Comets* appear'd, and in what manner he obſerv'd them. Secondly an *Aſtronomical Calculation* of their places and motions; and thirdly an *Aſtro-Theological Prognoſtick* of their *Effects*. Concerning the firſt *Comet* which was ſeen A° 1680, he ſays it was obſerved by himſelf no ſooner then the twenty third of *November*, at St. *V*. at Five a Clock in the Morning, tho others pretend to have ſeen it eight days before: nor could he obſerve it longer then the twenty fifth or twenty ſixth of *November*, by reaſon that its motion was towards the *Sun*, and having taken its diſtance from ſome *fixt Stars*, he found by *Trigonometrical Rules* that its place was then in 8° 8′ of *Scorpius*, with South Latitude of 2° 31′. Alſo by ſome other *obſervations* communicated to him, the *Comet* was the ſixteenth of *November* in 1° degree of *Libra* Latitude ¼ degrees *Auſtral*: From whence by the Analogy of its *Diurnal Motion* of five degrees, it ſhould have been the fourteenth of *November* a little above the leaſt *Star* in the left Wing of *Virgo*, as the firſt term or place of its Appearance. The

Prognoſtick which he gives, is grounded upon the Vulgar Suppoſition that *Comets* are Signs of ſuch miſchiefs and miſeries, as happen to men after a diſſolute and irregular life, and upon this ground he believeth that the *Viſion* ſhewn to the *Prophet Jeremiah* Chap. 1. Verſe 11 to the 13 was nothing elſe but the ſight of a *Comet;* And though (as he ſaith) he doth not like the common Aſtrologica *Juggling-Purſe* (ſo he calls it) where according to the Diviſion of the heaven in twelve *Houſes*, and the Diſtribution of the *Countries*, to the Signs of the *Zodiack*, the Superſtitious *Fortune-Tellers* do *prognoſticate* things, which have no reaſon nor grounds neither in nature or experience, yet it ſeems he cannot forbear himſelf to make uſe of the ſame *Trifles,* when he ſays that *Virgo* being a Sign of *Sterility*, *Libra* a Sign of *Juſtice* and *Death*, *Scorpio* an houſe of *Mars* and Sign of *Poyſons*, the *Comet* muſt ſignify War, Famine, Sickneſs, or a great Plague. As for the Natural cauſe of this *Comet,* he thinks, that in the ſame manner, as the great *Conjunction* of *Planets* in *Sagitarius* did produce a *Comet* in the year 1663. So by a new *Conjunction* of *Sol, Venus, Mercury* and *Luna* in the ſame *Sign*, and in oppoſition to *Jupiter* the like *Effect* might be taken notice of.

The ſecond *Comet* as ſome *Aſtronomers* do believe or rather the firſt *Comet* only continued in the ſame *motion* (as the *Author* thinks) did appear again Seventeen days after, that is the $\frac{12}{22}$ *December* 1680 but more clear and evidently the $\frac{18}{28}$ of *December* when the *Author* by his *Orthogonium* (an Inſtrument made of good ſtrong wood, whoſe *Radius* was ſix foot long) obſerved for many days the diſtance of the *Comet* from ſeveral *Stars*, and found by *Calculation* its Longitude and Latitude, according as he puts them down in the *Table* Pag. 93. The laſt time he made his *Obſervation* was the Thirtieth of *January*, ſo that the *Comet*, taking all its duration together, did laſt about 82 or 84 days: and conſidering its motion in which it paſt thro almoſt nine *Signs* of the *Zodiack*, its Angle of *Inclination* to the *Eclip-*

tick in the Morning appearance did not exceed three ½ degrees, but in *apparitione Veſpertina*, the *Angle* was above 28 and almoſt 29 degrees, its *Nodus Auſtralis* was according to the *Roman* Obſervation in 8 degrees of *Libra*, but afterwards its *Nodus Boreus* in 18° 19′ *Sagittary*, and by this reaſon and its *Diurnal* motion, the *Comet* paſſed by the *Sun*, in a diſtance of 11 degrees, juſt when the ſhorteſt day was in the year : its *Progreſſion* being firſt ſlow, but from the *Sun* much increaſed and ſwifter. Concerning the *Theory* or figure and line of its *motion*, he ſaith, that neither an *Arch* of a great, nor leſſer *Circle*, nor a ſtrait line will do the buſineſs; but rather a certain crooked line turned after an *inflection* like a *Serpent*, which never yet was known in any other *Comet*; or it muſt be ſuppoſed, that two different *Comets* have appeared, one in the Morning, and another in the Evening, as Mr. *Caſſini* doth conclude, tho the Author himſelf is perſwaded by the *Analogy* of the *motion*, *quoad Longitudinem*, that only one and no more appeared at that time; its *Tail* being in the Morning directed towards the *Weſt*. but in the Evening to the *Eaſt*. Alſo the ſeventeenth of *December* its *Tail* ſeemed to be divided into two parts, from the bottom to the top, by a *black ſtroak* paſſing through the middle. The length being ſometimes of Sixty, and the bredth of four degrees. About the ſubſtance and original cauſe of *Comets*, he hath no mind to ſay any thing, as being doubtful what they truely are, the diſpute of their *Parallax* not being yet fully decided, and ſo of their matter whether *Æthereal* or *Elementar* , the *Queſtion* not reſolved. But to ſhow the agreement of this *Comet* with others that have been obſerved, he hath compoſed a convenient Table, containing a *Liſt* of all *Comets*, that ever have been deſcribed by *Hiſtorians* and *Aſtronomers*, putting down firſt, the year before or after *Chriſt* when they have appeared. 2. The Place or Country where they have been ſeen 3. The *Authors* which have made mention of them. 4. The *month* or time of the year when they did firſt ariſe. 5. The time of the day whether in the Evening or Morning. 6. The name and ſhape of the *Comets*. 7. The Situation or to which part of the *Horizon* their motion did proceed. 8. The whole *Arch* or Quantity of *Degrees*, which they did run through or in want of that, the Sign of the *Zodiack* to which they have a relation. 9. The *Number* or Quantity of *Days* which they did *laſt*. 10. The *Degrees* of their ſwifteſt *motion*. 11. The *Degrees* of the length of their *Tail*. 12. The direction of their *Tails*, to any part of the *Heaven*. And 13. The Effects, miſchiefs, and ſtrange accidents that have hapned after their *Appearance*. Among theſe ſome have been obſerved in the ſhape of the *Sun*, ſome of the *Moon*, and *Venus*, ſometimes there have been three or four *Comets* together, as in the year 843 and 1529 &c. So that the *Number* of all in the ſpace of 4000 years does amount to 370 *Comets*. To which now muſt be joyned another or the third *Comet* that was ſeen in the year 1682 in the *month* of *Auguſt*: The *Author* made his firſt *Obſervation* the $\frac{12}{22}$ day, though at *Nuremberg* it was diſcovered the $\frac{14}{24}$ its place was found the $\frac{12}{22}$ at night a quarter after one, to be in 11° 29′ *Leonis*, with *North* Latitude of 26° 10′, its *Tail* being almoſt fourteen degrees long, its *Head* like a *Star* of the firſt Magnitude, the *Angle* of *Inclination* to the *Ecliptick* of 20 ½ *degrees*. Its motion was the ſwifteſt *in limite maxime Boreo*, ſo that every day it went forwards ſeven degrees, the *Tail* and *Head* had alſo the greateſt brightneſs at that time. From whence the *Motion*, *Tail* and *Light* ſeemed to decreaſe proportionally, till the $\frac{7}{17}$ of *September*, which was the laſt day it could be ſeen by the *Author*, having run over 94 degres in twenty four days. The *line* of *Direction* was in Oppoſition to the *Sun* as uſually it is in *Comets*. The *Prognoſtications* which after the Deſcription of the ſecond and this third *Comet*, the Author hath added, are upon the ſame grounds as the former, drawn out of the Nature of *Hieroglyphical* Signs and Images,

ges, that commonly are to been in the *Celeſtial Globes*. He explains this among other *Queſtions*, whether *Comets* if they be *Natural Bodies* that have their regular motions like other *Stars*, (ſo that the time of their appearance may be predicted) yet their *ſignification* and *influence* may not have the ſame force as if they were ſome extraordinary products of Nature; and he concludeth that they may ſerve like an *Alarm* in a *Clock work*, to ſtir up the *world* to a better contemplation of *Heaven*.

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